

WHAT IS CLAIMED IS:

1. A friction clutch assembly for connecting driving and driven shafts, comprising

a cover adapted for mounting on a flywheel of said driving shaft in a fixed axial position relative to the flywheel and for conjoint rotation with the flywheel,

a pressure plate supported by the cover for rotation therewith, the pressure plate having a contact surface for receiving a driving force from the driving shaft, the pressure plate being axially moveable between an engaged position wherein the pressure plate applies a force to clamp a friction disk of said driven shaft in operative engagement with the flywheel thereby to transmit torque from the driving shaft to the driven shaft and a disengaged position wherein the pressure plate does not clamp said friction disk and substantially no torque is transmitted to the driven shaft,

a spring supported by the cover to urge the pressure plate into the engaged position, compression of said spring releasing pressure on said pressure plate to permit movement of said pressure plate to the disengaged position,

at least one spacer fixedly attached to the cover and the flywheel for conjoint rotation therewith, the spacer being slidably received by the pressure plate to connect the pressure plate to the cover and permit axial movement of the pressure plate between the engaged position and the disengaged position, the spacer having an external surface that engages the pressure plate upon rotation of the flywheel,

the spacer being rotatably moveable with the cover and the flywheel, and the external surface of the spacer conforming to the contact surface of the pressure plate so that torque is transmitted between the flywheel and the pressure plate over at least a line of engagement of the

35 spacer external surface and the pressure plate contact
surface upon rotation of the flywheel.

5 2. The friction clutch assembly set forth in claim 1
wherein the external surface of the spacer includes at least
two contact surfaces and the pressure plate comprises at
least two contact surfaces, one for each of the contact
surfaces of the spacer.

3. The friction clutch assembly set forth in claim 2
wherein said pressure plate has a notch including the
contact surfaces of the pressure plate, and wherein said
spacer is received in the notch.

4. The friction clutch assembly set forth in 3 wherein
the contact surfaces of the spacer and the contact surfaces
of the pressure plate are adapted for conformal engagement
along respective aligned portions of the contact surfaces.

5. The friction clutch assembly set forth in claim 4
wherein said engagement of respective contact surfaces
occurs over substantially the entire aligned portion of the
contact surfaces.

5 6. The friction clutch assembly set forth in claim 3
wherein a first of the contact surfaces of the spacer
engages a first of the contact surfaces of the notch upon
rotation of the flywheel in one direction and a second of
the contact surfaces of the spacer engages a second of the
contact surfaces of the notch upon deceleration of the
flywheel.

7. The friction clutch assembly set forth in claim 4
wherein said conformal contact surfaces of the notch and the
spacer are planar.

8. The friction clutch assembly set forth in claim 7 wherein said conformal contact surfaces of the notch and spacer are parallel upon engagement of the contact surfaces.

9. The friction clutch assembly set forth in claim 7 wherein said notch is a V-shaped notch.

10. The friction clutch assembly set forth in claim 3 further comprising an intermediate pressure plate, wherein said intermediate pressure plate has an external surface adapted for contact with said spacer.

11. The friction clutch assembly set forth in claim 10 wherein said intermediate plate has a notch with a first and second contact surface that are shaped to conform with the contact surfaces of the pressure plate.

12. The friction clutch assembly set forth in claim 1 wherein the external surface of said spacer has at least three planar contact surfaces, the spacer being adapted for being indexed to different positions for selectively
5 presenting any one of its contact surfaces for engaging the contact surface of the pressure plate.

13. The friction clutch assembly set forth in claim 12 wherein at least one of said at least three contact surfaces of the spacer is not disposed for engaging the pressure plate in each index position of the spacer.

14. The friction clutch assembly set forth in claim 13 wherein the spacer is adapted to rotate about a longitudinal axis of the spacer to each of the indexed positions.

15. A friction clutch assembly for connecting driving and driven shafts, comprising:

a cover adapted for mounting on a flywheel of the driving shaft in a fixed axial position relative to the flywheel and for conjoint rotation with the flywheel,

a pressure plate supported by the cover for rotation therewith, the pressure plate being axially moveable between an engaged position wherein the pressure plate applies a force to clamp a friction disk of said driven shaft in operative engagement with the flywheel thereby to transmit torque from the driving shaft to the driven shaft and a disengaged position wherein the pressure plate does not clamp said friction disk and substantially no torque is transmitted to the driven shaft,

a spring in contact with the pressure plate whereby the spring urges the pressure plate into the engaged position, compression of said spring releasing pressure on said pressure plate to permit movement of said pressure plate to the disengaged position,

the cover having a continuous curved surface to resist deflection and prevent premature failure of the cover, the continuous curved surface having a varying radius of curvature over a length of the curved surface.

16. The friction clutch assembly set forth in claim 15 wherein said continuous curved surface conforms to a splined curved defined at lest in part by the polar equation $r(t)=1 + \cos t$.

17. The friction clutch assembly set forth in claim 15 wherein said curved surface is an external surface of the cover.

18. The friction clutch assembly set forth in claim 17 further comprising a curved surface on an internal surface of the cover.

19. The friction clutch assembly set forth in claim 15 wherein said cover has a non-uniform cross-sectional thickness along said continuous curved surface.

20. A cover for a friction clutch assembly connecting driving and driven shafts, said cover being adapted for mounting on a flywheel of the driving shaft in a fixed axial position relative to the flywheel and for conjoint rotation with the flywheel, the cover having a continuous curved surface with a varying radius of curvature over a length of the curved surface.

21. The cover as set forth in claim 20 wherein said continuous curved surface conforms to a splined curved defined at least in part by the polar equation $r(t) = 1 + \cos t$.

22. The friction clutch assembly set forth in claim 20 wherein said curved surface is an external surface of the cover.

23. The friction clutch assembly set forth in claim 22 further comprising a curved surface on an internal surface of the cover.

24. The friction clutch assembly set forth in claim 20 wherein said cover has a non-uniform cross-sectional thickness along said continuous curved surface.

25. A method of indexing at least one spacer of a friction clutch assembly connecting driving and driven shafts, the at least one spacer being releasably attached to a cover and a flywheel for conjoint rotation therewith and being slidably received by a pressure plate, said spacer being adapted for engaging said pressure plate upon rotation

of the flywheel for the transmission of torque from the flywheel to the pressure plate, said method comprising the steps of:

- 10 releasing said at least one spacer from the cover, the spacer prior to release being in a first position relative to the cover in which a first contact surface of the spacer is disposed for primary contact with the pressure plate in use;
- 15 rotating said at least one spacer to a second position so that a second surface of the spacer is aligned for primary engagement with the pressure plate in use and said first contact surface is aligned to be free from primary contact with the pressure plate;
- 20 securing said at least one spacer to the cover in said second position.